Jan. 26, 1954 C. B. RICHEY 2,667,022

STALK SHREDDER HAMMER AND SPACER

Filed Oct. 17, 1951

FIG. 1

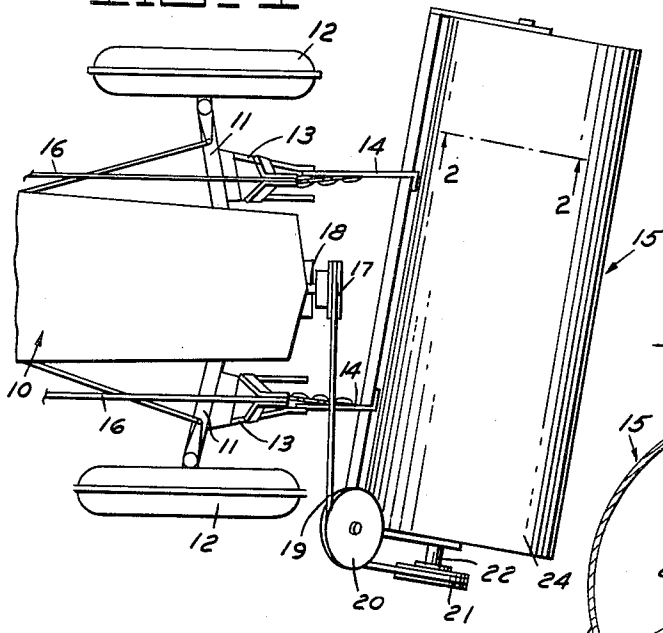


FIG. 2

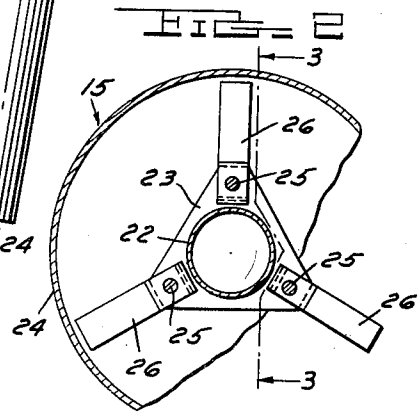


FIG. 3

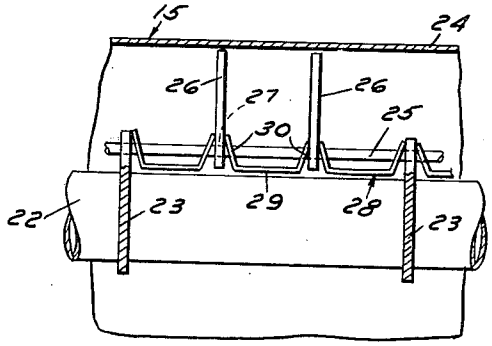


FIG. 4

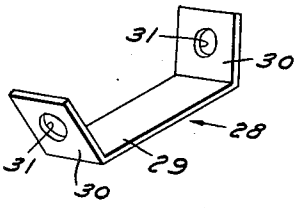


FIG. 5

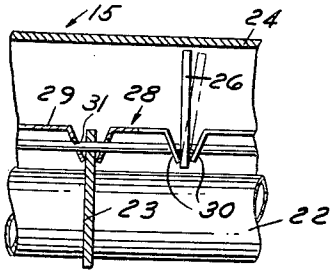
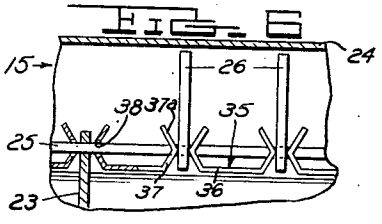


FIG. 6



INVENTOR.
CLARENCE B. RICHEY
BY
W. A. Schaich
ATTORNEY

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STALK SHREDDER HAMMER AND SPACER

Clarence B. Richey, Royal Oak, Mich., assignor to Dearborn Motors Corporation, Birmingham, Mich., a corporation of Delaware

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3 Claims. (Cl. 55—118)

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The present invention relates to a stalk shredder hammer assembly and more particularly to a hammer assembly for a stalk shredder wherein restricted lateral movement of the shredder's hammer is accommodated to reduce hammer breakage under operating conditions.

The stalk shredders of the prior art typically comprise a rotary flail assembly enclosed within an open bottomed casing, the flail assembly including a plurality of aligned individually mounted hammers disposed upon a rotatable shaft. The hammers are mounted on the shaft for rotation thereon and are free for movement in a plane radial to the associated shaft, so that the hammers, though normally held outwardly by centrifugal force, are free to swing in the radial plane upon contact with the ground. The hammers are held against lateral movement, i. e., movement axially of the shaft, by rigid spacer collars, and the hammers have been frequently bent and broken upon contacting the stones or other objects tending to force the hammers laterally. This problem is particularly acute where the shredder is inclined to the path of its travel, i. e., where the vertical plane of hammer travel is inclined to the path of tractor movement, and such inclined shredders have not proved practical due to hammer breakage, even though improved ground area coverage may be obtained in this manner.

The present invention now provides an improved hammer assembly for a stalk shredder including means accommodating limited lateral swinging or shifting of the individual hammers. More specifically, the present invention utilizes a spacer interposed between adjacent hammers and having inclined arms which tend to retain the hammer in true radial position, but which accommodate lateral deflection of the hammer therefrom.

It is, therefore, an important object of the present invention to provide an improved hammer assembly for a stalk shredder whereby lateral relative movement of the shredder hammers is accommodated.

Another object is the provision of a stalk shredder particularly adapted to operate in a position laterally inclined with relation to the shredder path of travel and having means for accommodating lateral deflection of the shredder hammers.

It is a further important object to provide an improved hammer assembly for a stalk shredder including a plurality of hammers disposed upon a common axis for pivoted movement and for individual lateral deflection thereon.

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Still another important object of this invention is the provision of the stalk shredder having a plurality of hammers disposed on a shaft for free pivoting movement and rigid spacer elements between the hammers having inclined arms immediately adjacent the hammers for accommodating relative lateral movement thereof.

The specific nature of this invention, as well as other objects and advantages thereof, will become apparent to those skilled in the art from the following detailed description, taken in conjunction with the attached sheet of drawings on which, by way of preferred example only, are illustrated two embodiments of this invention.

On the drawings:

Figure 1 is a plan view of a stalk shredder mounted upon a tractor and provided with a hammer assembly of the present invention;

Figure 2 is a fragmentary enlarged sectional view, with parts shown in elevation, taken along the plane 2—2 of Figure 1;

Figure 3 is a fragmentary sectional view taken along the planes 3—3 of Figure 2 illustrating the hammer assembly in an at-rest position;

Figure 4 is an enlarged perspective view of hammer assembly spacing element of the present invention;

Figure 5 is a fragmentary view similar to Figure 3 illustrating the operation of the assembly of Figures 1–4, inclusive; and

Figure 6 is a fragmentary view similar to Figures 3 and 5 illustrating a modified form of hammer assembly of the present invention.

As shown on the drawings:

In Figure 1, reference numeral 10 refers generally to a tractor, such as a Ford tractor, having a tractor energized hydraulic system and laterally extending front axles 11 supporting front wheels 12 thereon. The tractor front axle is provided with forwardly extending mounting brackets 13.

The brackets 13 support forwardly extending arms 14 upon which is disposed a stalk shredder indicated generally at 15, the brackets also carrying rearwardly extending actuating rods 16 which are connected to the tractor hydraulic system to elevate and lower the shredder 15 from and to working position. The shredder is driven by a sheave 17 disposed upon an engine driven shaft 18 and lapped by a V-belt or the line 19 which also laps an idler sheave 20 and a driven sheave 21. The driven sheave 21 is disposed upon a shredder axle 20 which carries a plurality of axially spaced support plates 23 (Figures 2 and 3) along the length thereof in the interior of the

shredder casing 24. The plates 23 support longitudinally extending shafts 25 which are rotatable with the axle 22 about the axle axis, and the shafts each support a plurality of shredder hammers 26 which are provided with enlarged aperture 27 which are substantially larger than the shafts 25, so that the hammers are free to pivot about the shaft axis independently of one another.

Of course, during rotation of the axle, the hammers 26 will be subjected to centrifugal force which will tend to retain the hammers in their radially outward positions illustrated in Figure 2. However, the enlarged apertures 27 accommodate radial movement of the hammers, as upon their striking an obstruction preventing their movement with the shaft.

Between adjacent hammers 26, and also between the hammers 26 and the adjacent spacer plates 23, there are disposed spacer elements 28, particularly shown in Figure 4. The spacer elements 28 comprise a central web portion 29 and outwardly projecting ears 30 formed integrally with the web portion 29 and projecting therebeyond in the same general direction. It will be noted that the ears 30 are inclined outwardly from the web portion 29 so as to lie in a plane displaced from the radial plane in which the hammers 26 are normally disposed. The ears are apertured, as at 31, to receive the shafts 25 therethrough and the distance between the ears 30 at their outer ends is substantially the same as or slightly less than the distance between adjacent hammers 26, and between hammers 26 and the adjacent spacer plate, while the length of the web 29 is substantially less than these distances. During rotation of the axle 22, the centrifugal forces exerted upon the spacers 28 will cause the same to assume the positions of Figure 5, in which the web portions 29 are radially spaced from the axle, and the ears 30 converge toward the inner ends of the hammers 26.

Consequently, the hammers 26 are free to swing laterally as indicated by the adjusted position of the hammer 26 of Figure 5. This lateral swinging movement is thus accommodated by the spacer elements 30, while at the same time the closeness of the outer extremities of the ears 30 aids the centrifugal forces acting upon the hammer to center the hammer in its substantially radial position after the obstruction is cleared. The ears 30 on either side of a given hammer 26 may thus be described as radially inwardly convergent with the inner convergence of the ears accommodating lateral deflection of the hammers.

In Figure 6, a different form of hammer spacer is illustrated which is adaptable for use with the identical shredder axle and hammer assembly hereinbefore described, the identical portions of the mechanisms being identified by identical reference numerals.

The spacer elements 33 comprise central web portions 36 and generally V-shaped out-turned ears 37 terminating in inturned projections 37a. The ears are apertured, as at 38, at the juncture of the out-turned and inturned portions thereof, the apertures being adapted to receive the shaft 25 therethrough. It will be seen that the only spacer-hammer contact occurs at the line of juncture of the portions 36 and 37 (at the apices of the V-shaped ears), and this line contact is aligned with a diameter of the shaft 25. Thus, lateral movement of the hammers 26 takes place about an axis aligned with contacting portions of the spacers, and there is no interference with such free swinging movement of the hammers. Further, rotation of the spacers due to centrifugal forces exerted thereon during use of the shredder, as explained in connection with Figure 5, has no effect upon the manner in which swinging of the hammers is accommodated.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim:

1. A hammer assembly for a stalk shredder having a rotatable axle, comprising a pair of axially spaced supporting elements rotatable with said axle, a shaft carried by said elements for rotation about the axis of said axle, a plurality of spaced hammers respectively having enlarged apertures through which said shaft freely extends, and hammer spacing ears having medial apertures, respectively, receiving said shaft therethrough, each of said hammers being snugly interposed between a pair of said ears, with the surfaces of said ears adjacent said hammers being inclined with respect to a radial plane of said axle to limit angular deflection of said hammers from a normal radial plane.

2. The combination of claim 1 wherein said ear surfaces terminate in line contact with the adjacent hammer in radially spaced relation to said shaft.

3. The combination of claim 1 wherein said ear surfaces are of V-shaped configuration with the apices of said surfaces contacting the adjacent hammer in immediate proximity to said shaft.

CLARENCE B. RICHEY.

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